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July 8, 2004

Secretary, Federal Trade Commission
Division of Enforcement, Bureau of Consumer Protection,
Federal Trade Commission, Room H-159
600 Pennsylvania Avenue, N.W.
Washington, DC 20580



SUBJECT: Adoption of Proposed Rules of 16CFR Part 460

REFERENCES: 16 CFR Part 460 Labeling and Advertising of Home Insulation (Proposed Rules dated 7/15/03)
ASTM C739-03 "Standard Specification for Cellulosic Fiber (Wood-Base) Loose-Fill Thermal Insulation"
ASTM C1374-03 "Determination of Installed Thickness of Pneumatically Applied Loose-Fill Building Insulation"
CAN/ULC-S703-01 "Standard for Cellulose Fiber Insulation (CFI) For Buildings"

ATTACHMENTS: Chart 1: ASTM C1374 Test Data using 1.5BCS Material
Chart 2: ASTM C518 results using 1.5 BCS Material for range of Installed Densities
Chart 3: New Progressive Cover Chart method versus Traditional method
1. ASTM C739 §17.2.4 (both -97 & -03)
2. CAN/ULC-S703-01 §7.3 Coverage Chart

Dear Mr. Secretary:

We are providing this letter to document the procedure US GreenFiber intends to follow to create loose-fill coverage charts in light of the upcoming subject Proposed Rules change.

We took the subject Proposed Rules and went through the process of creating a coverage chart for US Green Fiber's Cocoon™ cellulose loose-fill insulation. In particular, the additional requirement to add a new column of *Installed Thickness* using ASTM C1374 Test Method was utilized.

Current Proposed §460.5-(a)-(5): For loose-fill insulations, the initial installed thickness for the product must be determined pursuant to ASTM C1374-97 "Determination of *Installed Thickness* of Pneumatically Applied Loose-Fill Building Insulation," for R-values of 11, 13, 19, 22, 24, 32, 40 and any other R-values provided on the product's label pursuant to §460.12

The method to determine *Installed Thickness*, using ASTM C1374 was found to have excellent repeatability and it clearly shows that the installed density (pounds per cubic foot) increases as the amount of material thickness (inches) increases. This material property, which has been described as progressive density in the industry, was also clearly demonstrated in the Precision and Bias and Appendix Sections of ASTM C1374. Our test data using the ASTM C1374 test procedure proves that Cocoon loose-fill insulation has different densities for different installed thicknesses as well (See CHART 1: ASTM C1374 Test Data using 1.5 BCS material).

As a result, this new progressive density information should require R-value measurements at a variety of densities; however, the Rule contains a specific instruction to cellulose insulation manufacturers for measurement of R-value.

Current Proposed §460.5-(a)-(2): For loose-fill cellulose, the tests must be done at the settled density determined under paragraph 8 of ASTM C739-97, "Standard Specification for Cellulosic Fiber Wood-Base) Loose-Fill Thermal Insulation."

The cellulose insulation industry is constrained by this clause. Until now, a single design density, or commonly called BCS (Blown Cyclone Shaker) test, from ASTM C739 has been used to measure R-value per inch as well as calculate all the coverage data on the traditional coverage chart for cellulose loose-fill material. This single design density and a single R-value per inch were used for determining both the amount of material needed and the expected R-value. With the knowledge of progressive density, and the R-value variation with density relationships, we feel our current coverage charts do not instruct the consumer to use the proper amount of our insulation in order to achieve the stated minimum R-value. It is our position that the traditional method for creating cellulose loose-fill insulation coverage charts is obsolete.

For clarification we have provided an example of our Cocoon™ coverage chart calculated with both the new format and the old format (See Chart 3). They are significantly different. The new format clearly requires more material than we previously recommended starting from about R-30 and above. (See Chart 3 for details)

The final area we wish to address is the relationship between R/inch and density. This relationship is well known to apply to all loose-fill insulations. To evaluate the effect on R/inch for Cocoon™ insulation manufactured at a 1.5 lb/ft³ design density (BCS test), we tested through a range of expected settled densities. This density range corresponds to the installed density results from ASTM C1374 with a settling factor applied. The R-value per inch ranged from 3.49 to 3.80. (See Chart 2 for details). It is well known in the industry that non-cellulose fibrous loose-fill insulations have a greater variation of R-value with density.

Therefore the steps used to create a loose-fill cellulose insulation coverage chart are:

1. Product characteristics
 - a. Determine Design Density based on ASTM C739 (BCS test) which for Cellulose insulation characterizes the product being manufactured.
 - b. Measure installed thickness performance based on ASTM C1374 for three or four weights per square foot which cover the anticipated range of installed thickness, and determine an equation which describes installed thickness as a function of weight per square foot. (See Chart 1)
 - c. Calculate the range of installed densities from step 1.b and estimate the respective range of settled density. Measure R-value per inch performance (based on ASTM C518) using material with the same design density from (step 1.a) over the range of settled densities. Determine an equation that shows the relationship between densities as a function of R-value per inch. (See Chart 2)
2. Apply characteristic data to make the coverage chart as required by section §460.12 (b) (2).
 - a. Create a chart similar to Chart 2A to determine the relationship between loose-fill pounds installed to total R-value. From this determine two equations
 - i. Settled Density as a function of Total R-value
 - ii. Settled inches as a function of Settled Density
 - b. See Chart 3 for completion of a typical coverage chart

Current Proposed §460.12 (b) (2): For all loose fill insulation: The *minimum settled thickness*, initial installed thickness, maximum net coverage area, number of bags per 1,000 square foot at R-values of 11, 13, 22, 24, 32 and 40. You must also give this information for any additional R-values you list on the chart. Labels for these products must state the minimum net weight of the insulation in the package. You must also provide the appropriate blowing machine settings necessary to achieve the initial installed thicknesses listed on your label.

The method to determine *minimum settled thickness* from the ASTM C1374 measurements is not provided in ASTM C1374 or the proposed rule. US GreenFiber, LLC will propose to move from the traditional method of using BCS to make a single density coverage chart and use the progressive density determined from ASTM C1374 as the basis for determining the rest of the information on the coverage chart. In addition the settling factor provided in the Canadian Standard CAN/ULC-S703-01 §7.3 will be used.

Our position is to instruct the consumer to install the required amount of Cocoon™ insulation based on a reasonable amount of testing. This position means that both the progressive density property and the relationship of R-Value to density should be taken into account to develop an accurate coverage chart. We believe this should apply to all loose-fill insulation products. It is well known the R/in changes some with changes in density for cellulose insulation; it is equally well known that R/in changes dramatically with changes in density of loose-fill mineral fiber insulation. It is also well known that these products exhibit a progressive density and this should be clearly evident on their new coverage charts with the addition of ASTM C1374.

US GreenFiber, LLC is concerned that §460.5-(a)-(2) traditionally used to create a linear coverage chart is a constraint on the cellulose industry and is not fair to the consumer. It should be noted that ASTM C739, can be interpreted to support the method included in this letter to create a coverage chart. All the data created is based on product with a consistent BCS design density per C739.

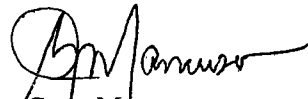
ASTM C739-(both 97 & 03) §17.2.5“ Filled-in coverage chart shall be based on the design density determined in Section 8, which shall contain the information prescribed in Table 4,”

We do believe that the addition of ASTM C1374 is positive so therefore recommend this change stay in the rule. We agree the proposed rule should be issued as is.

It is US GreenFiber's policy to honor all laws and standards in regards to the manufacturing, shipment, advertising, labeling, and sale of our cellulose insulation products. We are firmly committed to provide the insulation contractors and ultimately the consumer with the proper amount of Cocoon™ insulation necessary to obtain the required long-term thermal value. Incorporating ASTM C1374 into the Rule facilitates a major step in the right direction for the whole insulation industry.

Please feel free to contact us if there are any questions.

Sincerely,



Gerry Mancuso
Corporate Quality Control Manager

Ec: D. Barrineau D. Bowman F. Burroughs I. Smith FTC (Hampton Newsome)
ICAA (Michael Kwart) CIMA (Dan Lee, Mark Leuthold) NuWool & ASTM C739 Chair (Herb Harney)
Cc: USGF Project file 04-016

Chart 1: ASTM C1374 Test Data using 1.5 BCS Material



Product tested was US GreenFiber INS550LD with a
design density of 1.5 lb/ft³ per ASTM C739
Equipment used and Setting: Accu-1 @ 3/4 open
Sample data is average of 13 point in a 80 ft² box

Date: 6/8/2004
Project # 04-16
Prepared by: G Mancuso

Installed Thickness				Avg of 3
Using 1.5 lb/ft^3 BCS Material				
Pounds Blown	1	2	3	Runs
40.000	5.077	5.096	5.346	5.173
70.000	8.019	7.46	8.135	8.000
180.000	16.981	17.481	17.308	17.257

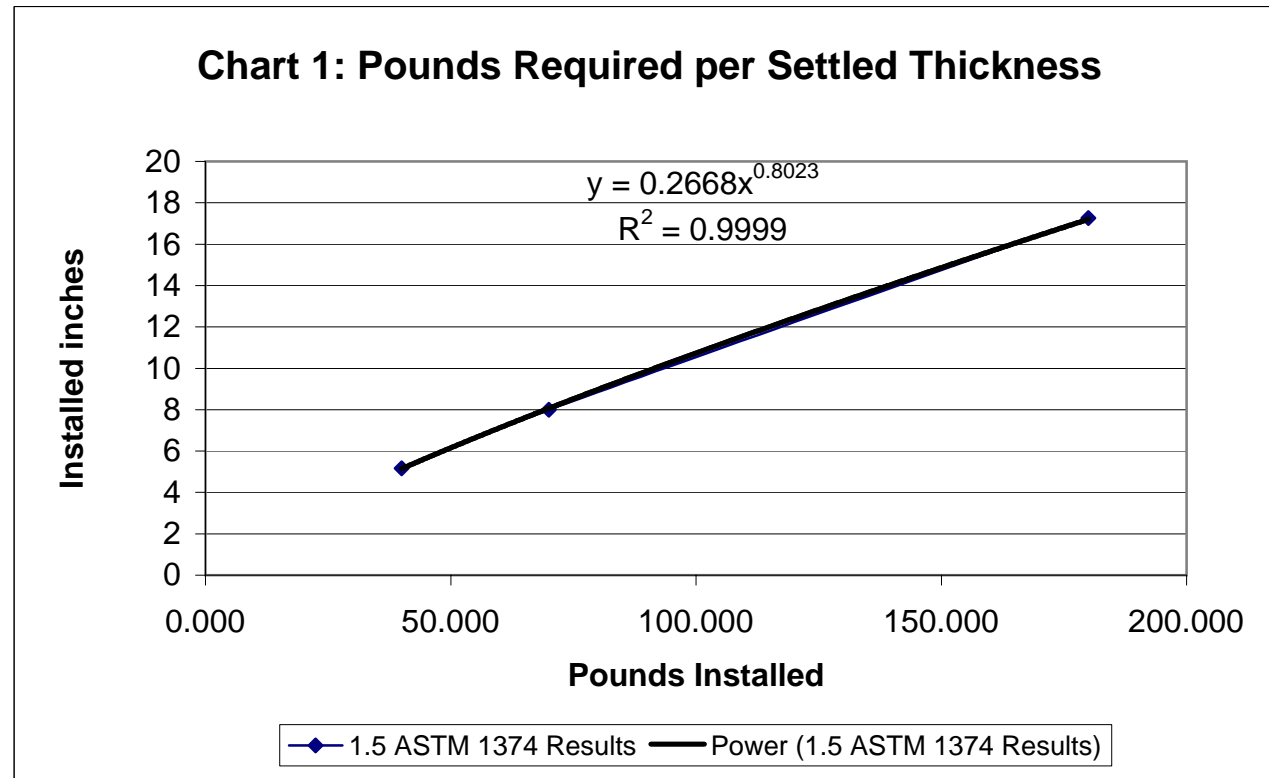


CHART 2A: Uses of Equations from Chart 1 & Chart 2 for Total R-Value

A	B	C	D	E	F	G
Installed Pounds	Installed Inches	Settled Inches	Installed Weight (lb./ft ²)	Settled Density (lb./ft ³)	R-value per inch @ Settled Density	Total R-value
20.00	2.95	2.64	0.25	1.14	3.42	9.02
25.00	3.53	3.15	0.31	1.19	3.47	10.93
30.00	4.09	3.65	0.38	1.23	3.50	12.78
35.00	4.62	4.13	0.44	1.27	3.53	14.58
40.00	5.15	4.60	0.50	1.31	3.56	16.34
45.00	5.66	5.05	0.56	1.34	3.58	18.07
50.00	6.16	5.50	0.63	1.36	3.60	19.77
55.00	6.64	5.93	0.69	1.39	3.61	21.44
60.00	7.13	6.36	0.75	1.41	3.63	23.08
65.00	7.60	6.78	0.81	1.44	3.64	24.70
70.00	8.06	7.20	0.88	1.46	3.65	26.30
75.00	8.52	7.61	0.94	1.48	3.66	27.88
80.00	8.98	8.01	1.00	1.50	3.67	29.44
85.00	9.42	8.41	1.06	1.52	3.68	30.99
90.00	9.86	8.81	1.13	1.53	3.69	32.51
95.00	10.30	9.20	1.19	1.55	3.70	34.03
100.00	10.73	9.59	1.25	1.56	3.71	35.53
105.00	11.16	9.97	1.31	1.58	3.71	37.01
110.00	11.59	10.35	1.38	1.59	3.72	38.48
115.00	12.01	10.72	1.44	1.61	3.72	39.94
120.00	12.43	11.10	1.50	1.62	3.73	41.39
125.00	12.84	11.47	1.56	1.64	3.74	42.83
130.00	13.25	11.83	1.63	1.65	3.74	44.25
135.00	13.66	12.20	1.69	1.66	3.74	45.67
140.00	14.06	12.56	1.75	1.67	3.75	47.07
145.00	14.46	12.92	1.81	1.68	3.75	48.47
150.00	14.86	13.27	1.88	1.70	3.76	49.85
155.00	15.26	13.63	1.94	1.71	3.76	51.23
160.00	15.65	13.98	2.00	1.72	3.76	52.60
165.00	16.04	14.33	2.06	1.73	3.77	53.95
170.00	16.43	14.67	2.13	1.74	3.77	55.30
175.00	16.82	15.02	2.19	1.75	3.77	56.65
180.00	17.20	15.36	2.25	1.76	3.77	57.98
185.00	17.58	15.70	2.31	1.77	3.78	59.31
190.00	17.97	16.04	2.38	1.78	3.78	60.63

* Settling Factor based on Canada Spec CAN/ULC-S703-01 Section 7.3
 This Section requires an addition of 12% to Settled to get Applied
 Therefore if AI = Applied inches and SI = Settled Inches the relationship is

$SI + .12SI = AI$ or
 $1.12 * SI = AI$ or
 $SI = AI / 1.12$ or SI = .893AI

Project # 04-016

Prepared by: G. Mancuso
 7/1/2004

greenfiber

FACTORS		EQUATIONS
A	Installed Pounds	Given (expected range)
B	Installed Inches	$B = 0.2668 * A^{0.8023}$
C	Settled Inches	$C = .893B$
D	Installed lbs/ft ²	$D = A / 80ft^2$
E	Settled Density	$E = (D) * 12inches/ft * C$
F	R-value per inch	$F = -0.4968E^2 + 2.0048E + 1.7854$
G	Total R-value	$G = C * F$

Settling factor* 0.893

From CHART 1

Area installed is 80ft²

Chart 2A-1 Required Settled Density to Give a Stated Desired Total R-value

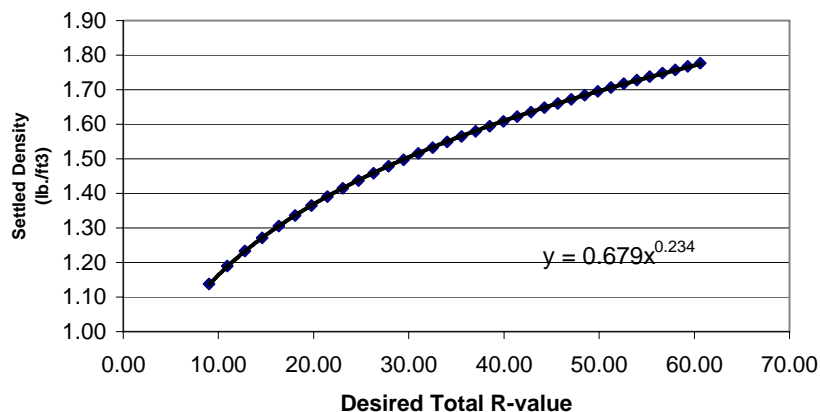


Chart 2A-2 Required Settled Inches to Give a Stated Desired Settled Density

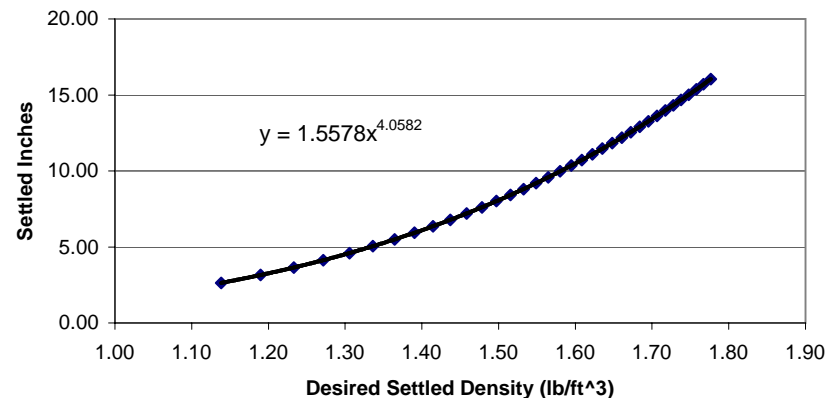


Chart 2: ASTM C518 results using 1.5 BCS Material for range of Installed Densities
 Testing done using ASTM C518 and C687 per ASTM C739 Section 15.0
 Planned density range was from 1.2 to 2.0

6/8/2004

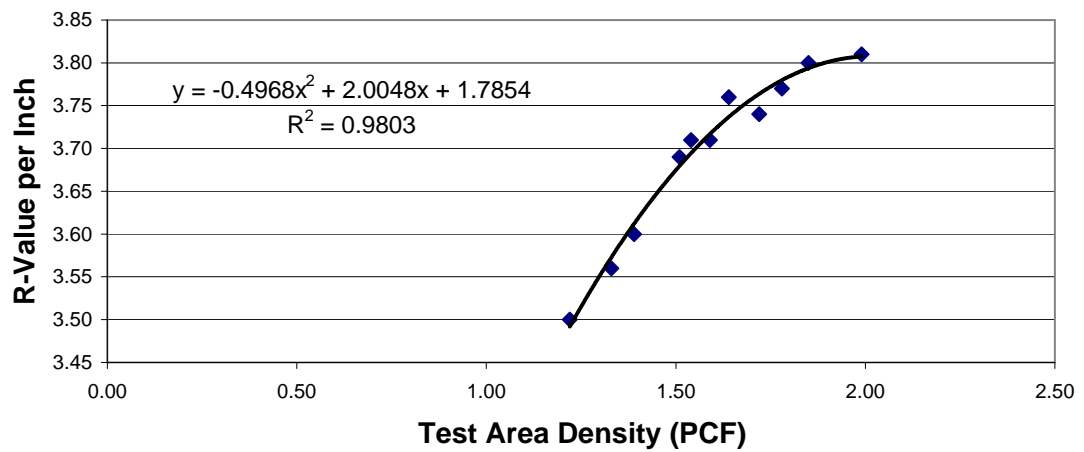
Project # 04-16

Prepared by : G. Manc



Final Test Area Density lb/ft ³	R-Value / Inch
1.22	3.50
1.33	3.56
1.39	3.60
1.51	3.69
1.54	3.71
1.59	3.71
1.64	3.76
1.72	3.74
1.78	3.77
1.85	3.80
1.99	3.81

**Chart 2-1: 1.5 Design Density R-Value per Inch
Performance R-value to Installed Density**



**Chart 2-1: 1.5 Design Density R-Value Performance
Installed Density to R-value**

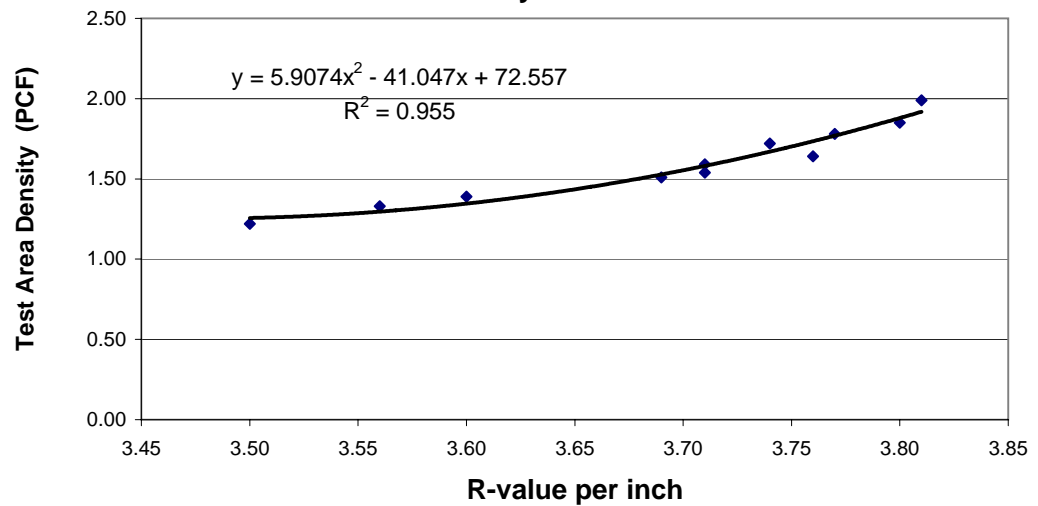


CHART 3: New Progressive Cover chart method vs Traditional method

Based on 1.50 BCS Density Material

Incorporated installed thickness using ASTM C1374 results that provide progressive density

Using R-value derived from settled density using ASTM C518

Bag Weight equals

Settling Factor =

Project 04-016

1-Jul-04



Prepared by : G, Mancuso

R-values on current bag

NEW Coverage chart using C1374 with varying R-value using 1.5 BCS material Order to Create						
1	3	4	5	6	7	2
A	B	C	D	E	F	G*
R-value	Minimum Settled Thickness	Initial Installed Thickness	Minimum Weight (lbs./ft2)	Maximum Net Coverage Per Bag	Minimum Bags Per 1,000 ft2	Settled Density
	(in)	(in)	Using C1374	Area^(ft2)	(count)	(lb/ft^3)
11	3.16	3.53	0.313	74.3	13.5	1.190
13	3.70	4.14	0.381	61.0	16.4	1.237
19	5.30	5.94	0.598	38.9	25.7	1.352
22	6.10	6.83	0.711	32.7	30.6	1.400
24	6.62	7.41	0.788	29.5	33.9	1.428
25	6.88	7.71	0.827	28.1	35.6	1.442
30	8.18	9.16	1.026	22.7	44.1	1.505
32	8.70	9.74	1.108	21.0	47.6	1.528
38	10.24	11.47	1.358	17.1	58.4	1.591
40	10.75	12.04	1.443	16.1	62.0	1.610
44	11.77	13.18	1.615	14.4	69.5	1.646
48	12.79	14.32	1.790	13.0	77.0	1.680
49	13.04	14.60	1.834	12.7	78.9	1.688
50	13.29	14.88	1.879	12.4	80.8	1.696
60	15.80	17.70	2.331	10.0	100.3	1.770

OLD Method using C739 1.5 BCS Material Based on R-value of 3.7 per inch				
Bo	Co	Do	Eo	Fo
Minimum Settled Thickness	Initial Installed Thickness	Minimum Weight (lbs./ft2)	Maximum Net Coverage Per Bag	Minimum Bags Per 1,000 ft2
(in)	(in)	using C739	Area^(ft2)	(count)
3.0	3.3	0.372	62.5	16.0
3.5	3.9	0.439	53.0	18.9
5.1	5.7	0.642	36.2	27.6
5.9	6.6	0.743	31.3	32.0
6.5	7.2	0.811	28.7	34.9
6.8	7.5	0.845	27.5	36.3
8.1	9.0	1.014	22.9	43.6
8.6	9.6	1.081	21.5	46.5
10.3	11.4	1.284	18.1	55.2
10.8	12.0	1.351	17.2	58.1
11.9	13.2	1.486	15.6	63.9
13.0	14.4	1.622	14.3	69.8
13.2	14.7	1.655	14.0	71.2
13.5	15.0	1.689	13.8	72.6
16.2	18.0	2.027	11.5	87.2

Old vs New		
Ratio 1 (Do-D)/Do	Ratio 2 R-value per inch A/B	Ratio 3 Diff. in R-value/in (3.7-A/B)/3.7
15.9%	3.49	-5.8%
13.1%	3.51	-5.0%
6.9%	3.58	-3.2%
4.3%	3.61	-2.5%
2.8%	3.63	-2.0%
2.1%	3.63	-1.8%
-1.2%	3.67	-0.9%
-2.5%	3.68	-0.6%
-5.7%	3.71	0.3%
-6.8%	3.72	0.5%
-8.7%	3.74	1.0%
-10.4%	3.75	1.5%
-10.8%	3.76	1.6%
-11.2%	3.76	1.7%
-15.0%	3.80	2.6%

* Column G is not currently required by the proposed rule 460

Column	Order Made	Description
A	1	As required by 16CFR460
G	2	$G=0.679*(A^{0.234})$ From Chart 2A
B	3	$B=1.5578*(G^{4.0582})$ From Chart 2A
C	4	$C=B/.893$
D	5	$D=(G/12)*B$
E	6	$E=(\text{lbs in Bag})/D$
F	7	$F=E/1000$

NEW COVERAGE CALCULATOR	
Coverage Chart Calculator	
What R-Value do you want?	<input type="text"/>
How Many Square feet (Area ft^2)Wanted?	<input type="text"/>
Inches you must install	#VALUE!
The number of bags you need	#VALUE!

C 739

1999 Version

17.2.4 Whether the manufacturer recommends that the insulation be installed at these minimum thicknesses, minimum weights, and maximum coverages, to provide the levels of insulation thermal resistance (R) shown,

17.2.5 Filled-in coverage chart shall be based on the design density determined in Section 8, which shall contain the information prescribed in Table 3,

17.2.6 Optional information for products intended for sidewall application,

17.2.6.1 *Certification*—"This insulation has been installed in conformance with the above recommendations, to pro-

vide a value of R - ____ using ____ bags of this insulation to cover ____ square feet of area," including:

17.2.6.2 Place for builder's signature, company name, and date, and

17.2.6.3 Place for applicator's signature, company, name, and date, and

17.2.7 Where material is intended for blowing or pouring application, the bag shall have a separate coverage for each type of application.

18. Keywords

18.1 cellulosic fiber; loose-fill; thermal insulation

APPENDIX

(Nonmandatory Information)

A1. ELECTRIC RADIANT PANEL

X1.1 For purposes of establishing in-house quality control conformance to critical radiant flux criteria, manufacturers may establish correlation between their electric radiant

panel^a and an accredited radiant panel.

^a The Vert Flux 100 electric radiant panel manufactured by Clayville Labs, P.O. Box 713, Burley, ID 83313, (208) 678-9791, or equivalent has been found suitable for this purpose.

TABLE 4 Example of Suggested Form for Insulation Coverage Chart

R Value at 75°F Mean Temperature (to obtain an insulation resistance (R))	Maximum Net Coverage		Thickness, in., min (that insulation should be not less than)	Weight, lb/ft ² , min (that insulation should be not less than)
	Bags/1000 ft ²	Maximum coverage per bags, ft ²		
Attic:				
R-50	---	---	---	---
R-44	---	---	---	---
R-40	---	---	---	---
R-38	---	---	---	---
R-32	---	---	---	---
R-30	---	---	---	---
R-24	---	---	---	---
R-22	---	---	---	---
R-19	---	---	---	---
R-13	---	---	---	---
R-11	---	---	---	---
Sidewalls:				
R---	---	---	---	---

16. Inspection

16.1 Inspection of the insulation shall be made as agreed upon by the purchaser and the manufacturer as part of the purchase contract.

17. Packaging and Package Marking

17.1 *Packaging*—Unless otherwise specified, the insulation shall be packaged in the manufacturer's standard commercial containers.

17.2 *Marking*—Each bag of insulation shall be marked to include the following:

17.2.1 Name of manufacturer,

17.2.2 Manufacturing date and location,

17.2.3 Net weight of insulation per bag,

17.2.4 Whether the manufacturer recommends that the insulation be installed at these minimum thicknesses, minimum weights, and maximum coverages, to provide the levels of insulation thermal resistance (R) shown,

17.2.5 Filled-in coverage chart shall be based on the design density determined in Section 8, which shall contain the information prescribed in Table 4,

17.2.6 Optional information for products intended for side-wall application,

17.2.6.1 *Certification*—"This insulation has been installed in conformance with the above recommendations, to provide a value of R- --- using --- bags of this insulation to cover --- square feet of area," including:

17.2.6.2 Place for builder's signature, company name, and date, and

17.2.6.3 Place for applicator's signature, company, name, and date, and

17.2.7 Where material is intended for blowing or pouring application, the bag shall have a separate coverage for each type of application.

18. Keywords

18.1 cellulosic fiber; loose-fill; thermal insulation

APPENDIXES

(Nonmandatory Information)

X1. ELECTRIC RADIANT PANEL

ASTM C1485

X1.1 For purposes of establishing in-house quality control conformance to critical radiant flux criteria, manufacturers may

establish correlation between their electric radiant panel⁹ and an accredited radiant panel.

⁹ The Veri Flux 100 electric radiant panel manufactured by Clayville Labs, P.O. Box 713, Burley, ID 83313, (208) 678-9791, or equivalent has been found suitable for this purpose.

7. PACKAGING AND LABELLING

7.1 PACKAGING

7.1.1 Unless otherwise specified, the product shall be packaged in a container marked in accordance with standard commercial practice and the requirements of Subsection 7.2.

7.2 MARKING / LABELLING

7.2.1 Each bag (package) of the *CFI* product shall be legibly labelled with the following information:

- A Manufacturer's name and address;
- B Trade name of the product;
- C Generic product name;
- D Material Type (i.e., Type 1 and/or Type 2);
- E Package weight;
- F Standard number CAN/ULC-S703;
- G Day/Month/Year of manufacture or traceable code number;
- H Coverage chart(s) providing the information described in Subsection 7.3; and
- I A cautionary note as follows:

"CAUTION: Maintain building, electrical, gas and oil safety code clearances between the insulation and heat emitting devices, such as fuel burning appliances, chimney pipes, ducts and vents to these appliances (at least 50-mm) and recessed light fixtures (at least 75-mm) unless approved for insulation contact."

7.3 COVERAGE CHART

7.3.1 Coverage charts shall be shown on the package for each labelled type. Charts for Types 1 and 2 open spaces, shall show a series of *thermal resistance* values with the corresponding required minimum *applied thickness* (and *settled thickness* for Type 1) to obtain the listed RSI value, the minimum mass-per-unit-area and the coverage per bag. To determine the *applied thickness* guideline required for Type 1 applications, add 12% to the desired *settled thickness* value. A sample coverage chart for Type 1 Open Spaces is as follows: